# ARITHMETIC MADE EASY,

IN THE

FIRST FOUR

FUNDAMENTAL RULES,

WITH AN APPENDIX OF REDUCTION

AND THE

SINGLE RULE OF THREE.

Alſo a Collection of

*ALL THE USEFUL TABLES.*

Submitted to the earlieſt and leaſt informed Capacities, and principally deſigned to revive the neglected, but uſeful Exerciſes of that Science.

To which are added for Illuſtration,

EXAMPLES AND PROOFS

UNDER EVERY RULE;

ALSO

For Exerciſe, many Examples and their Anſwers under every Caſe in REDUCTION and the RULE of THREE.

UPON AN INTIRE NEW PLAN.

BY J. BETTESWORTH,

Mathematical Maſter to the Maritime School, Chelſea.

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# PREFACE.

GREAT as our improvements have been in all arts and ſciences, for a century paſt in England, it is however a fact no leſs ſtrange than true, that many perſons are to be found, not only in the more remote and uncultivated parts of the kingdom, but even in this metropolis, notwithſtanding all its boaſted pre-eminence in commercial knowledge, who are extremely deficient in the ſimple rudiments of Arithmetical knowledge.—— This defect muſt neceſſarily ariſe either from indolence and inattention in youth, when at ſchool, or, which is more frequently the caſe, from the want of opportunity and practice in riper years. Hence proceed inconveniencies, difficulties, and loſſes to numbers in various occurrences of life.

To remedy all this, I was induced ſome time ago, to publiſh a ſhort treatiſe on the Four Firſt Fundamental Rules of Arithmetic. The very favorable reception that compendious eſſay met with from the Public, and the particular notice taken of its utility by the reviewers, encouraged me to enlarge my plan, which I have done on the ſame principle, ſtill adhering to my firſt idea, that the more plain and ſimple the terms uſed in explaining ſuch rules are, the better adapted they muſt be to convey inſtruction to thoſe capacities for which they are chiefly deſigned, the young and inexperienced. I flatter myſelf, that the additions made to the former plan will prove ſatisfactory, as the little work, in the ſtate in which it now appears, will be found to comprehend every thing neceſſary to inform the judgment, though entirely uncultivated, as well as to refreſh and ſtrengthen the memory of thoſe who may have made it a ſtudy at ſchool, but who may be now grown leſs expert from neglect or want of opportunity, as it will furniſh every attentive mind with the principles and means of becoming the moſt ready and accurate accomptant in the firſt four fundamental rules of Arithmetic, as alſo in *Reduction* and the *Rule* of *Three*, even without any perſonal aſſiſtance whatſoever. The utility of this little work to every one who may be any way deficient in ſuch knowledge, muſt be obvious; I therefore perſuade myſelf that no ſuch perſon will be without it, as by a few hours ſtudious reviſal they may become perfect adepts in this branch of neceſſary knowledge.

To conclude, the ſubject is confined to ſo narrow a compaſs for the conveniency of being portable, and that it might be afforded at ſo low a price as to put it in the power of every one, from the ſchool-boy to the tradeſman, to make an eaſy purchaſe. Let it be farther obſerved, that the youth of both ſexes deſtroy ſeveral books of much greater value before they have acquired competent ideas of the matter contained in this compendious treatiſe. And it is a notorious fact likewiſe, that very few, if any, of the female ſex are ſo perfectly converſant with Arithmetic as to be above deriving any benefit from this work.

## Numeration Table.

| Hundreds of Millions | Tens of Millions | Millions | Hundreds of Thousands. | Tens of Thousands. | Thousands | Hundreds. | Tens | Units. |
|---|---|---|---|---|---|---|---|---|
| 7 | 5 | 0 | 6 | 2 | 7 | 0 | 6 | 4 |
| | 7 | 2 | 0 | 0 | 5 | 7 | 0 | 6 |
| | | 5 | 7 | 0 | 3 | 4 | 7 | 0 |
| | | | 3 | 5 | 0 | 7 | 4 | 9 |
| | | | | 7 | 1 | 3 | 0 | 6 |
| | | | | | 7 | 2 | 4 | 6 |
| | | | | | | 5 | 7 | 3 |
| | | | | | | | 3 | 7 |
| | | | | | | | | 4 |

## Farthing T.

| Farthing T. | | d |
|---|---|---|
| 4 | Make | 1 |
| 6 | —— | 1½ |
| 8 | —— | 2 |
| 10 | —— | 2½ |
| 12 | —— | 3 |
| 14 | —— | 3½ |
| 16 | —— | 4 |
| 18 | —— | 4½ |
| 20 | —— | 5 |
| 22 | —— | 5½ |
| 24 | —— | 6 |
| 26 | —— | 6½ |
| 28 | —— | 7 |
| 30 | —— | 7½ |
| 32 | —— | 8 |
| 34 | —— | 8½ |
| 36 | —— | 9 |
| 38 | —— | 9½ |
| 40 | —— | 10 |
| 42 | —— | 10½ |
| 44 | —— | 11 |
| 46 | —— | 11½ |
| 48 | —— | 12 |

## Pence T.

| Pence T. | | s. | d. |
|---|---|---|---|
| 12 | Make | 1 | 0 |
| 20 | —— | 1 | 8 |
| 24 | —— | 2 | 0 |
| 30 | —— | 2 | 6 |
| 36 | —— | 3 | 0 |
| 40 | —— | 3 | 4 |
| 48 | —— | 4 | 0 |
| 50 | —— | 4 | 2 |
| 60 | —— | 5 | 0 |
| 70 | —— | 5 | 10 |
| 72 | —— | 6 | 0 |
| 80 | —— | 6 | 8 |
| 84 | —— | 7 | 0 |
| 90 | —— | 7 | 6 |
| 96 | —— | 8 | 0 |
| 100 | —— | 8 | 4 |
| 108 | —— | 9 | 0 |
| 110 | —— | 9 | 2 |
| 120 | —— | 10 | 0 |
| 130 | —— | 10 | 10 |
| 132 | —— | 11 | 0 |
| 140 | —— | 11 | 8 |
| 144 | —— | 12 | 0 |

## Shilling Table.

| Shillings | | l. | s. |
|---|---|---|---|
| 20 | Make | 1 | 0 |
| 30 | —— | 1 | 10 |
| 40 | —— | 2 | 0 |
| 50 | —— | 2 | 10 |
| 60 | —— | 3 | 0 |
| 70 | —— | 3 | 10 |
| 80 | —— | 4 | 0 |
| 90 | —— | 4 | 10 |
| 100 | —— | 5 | 0 |
| 110 | —— | 5 | 10 |
| 120 | —— | 6 | 0 |
| 130 | —— | 6 | 10 |
| 140 | —— | 7 | 0 |
| 150 | —— | 7 | 10 |
| 160 | —— | 8 | 0 |
| 170 | —— | 8 | 10 |
| 180 | —— | 9 | 0 |
| 190 | —— | 9 | 10 |
| 200 | —— | 10 | 0 |

## The Mutiplication Table.

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 4 | 6 | 8 | 10 | 12 | 14 | 16 | 18 | 20 | 22 | 24 |
| 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 | 27 | 30 | 33 | 36 |
| 4 | 8 | 12 | 16 | 20 | 24 | 28 | 32 | 36 | 40 | 44 | 48 |
| 5 | 10 | 15 | 20 | 25 | 30 | 35 | 40 | 45 | 50 | 55 | 60 |
| 6 | 12 | 18 | 24 | 30 | 36 | 42 | 48 | 54 | 60 | 66 | 72 |
| 7 | 14 | 21 | 28 | 35 | 42 | 49 | 56 | 63 | 70 | 77 | 84 |
| 8 | 16 | 24 | 32 | 40 | 48 | 56 | 64 | 72 | 80 | 88 | 96 |
| 9 | 18 | 27 | 36 | 45 | 54 | 63 | 72 | 81 | 90 | 99 | 108 |
| 10 | 20 | 30 | 40 | 50 | 60 | 70 | 80 | 90 | 100 | 110 | 120 |
| 11 | 22 | 33 | 44 | 55 | 66 | 77 | 88 | 99 | 110 | 121 | 132 |
| 12 | 24 | 36 | 48 | 60 | 72 | 84 | 96 | 108 | 120 | 132 | 144 |

# ARITHMETIC MADE EASY.

## ON ARITHMETIC.

*Q.* WHAT is Arithmetic?

*A.* The art of computation by numbers or figures.

*Q.* What does Arithmetic teach you?

*A.* To find the quantity, value and proportion of things.

*Q.* How is it performed?

*A.* By the uſe of the ten following characters or figures, viz. 0,1,2,3,4,5,6,7,8,9.

*Q.* What are the principle rules in order to obtain a thorough knowledge of Arithmetic?

*A.* Numeration, Addition, Subtraction, Multiplication and Diviſion, for it is impoſſible to perform any operations in

Arithmetic without the uſe of one or more of them.

## OF NUMERATION.

This teacheth to read or write numbers or figures; in performing of which obſerve well, that all characters, or figures more than *three* to *ſix* are ſo many thouſands, and from *ſix* to *nine* ſo many millions, &c.

### EXAMPLES.

Write in words 27.

*A.* Twenty ſeven.

Ditto 240.

*A.* Two hundred and forty.

Ditto 4017.

*A.* Four thouſand and ſeventeen.

Ditto 30710.

*A.* Thirty thouſand ſeven hundred and ten.

Ditto 103071.

*A.* One thouſand three hundred and ſeventy-one.

Write in words 5073205.

*A.* Five millions, ſeventy-three thouſand, two hundred and five.

Ditto, 49210076.

*A.* Forty-nine millions, two hundred, and ten thouſand and ſeventy fix.

Ditto, 610019204.

*A.* Six hundred, ten millions, nineteen thouſand, two hundred and four.

Expreſs in figures ninety-two?

*A.* 92.

Ditto, Two hundred and ten.

*A.* 210.

Ditto, Three thouſand and five.

*A.* 3005.

Ditto, Twenty one thouſand, two hundred and ſeventeen.

*A.* 21217.

Ditto, Nine hundred, two thouſand, four hundred and ſeven.

*A.* 902407.

Ditto, Seven millions, four hundred ſeventeen thouſand and thirteen.

*A.* 7417013.

Expreſs in figures Thirty-five millions, ſixteen thouſand two hundred and forty.

*A.* 35016240.

Ditto, Eight hundred ſeven millions, two hundred ten thouſand and nineteen.

*A.* 807210019.

## ARITHMETICAL CHARACTERS EXPLAINED.

+ Addition.
— Subtraction.
× Multiplication.
÷ Diviſion.
= Equality or equal.
•• Is to or to } As 2 •• 4 : : 6 •• 12
that is
: : So is } As 2 is to 4 ſo is 6 to 12

### EXAMPLE.

$$50+50=100-20=80\times 3=240\div 6=40$$

That is

50 added to 50 is equal to 100, ſubtract 20 therefrom it will then be equal

to 80 which multiply by 3 is equal to 240, this divided by 6 is equal to 40, as expreſſed by characters in page 12.

## SIMPLE ADDITION.

Teacheth to add two or more ſums together, to make one whole or total ſum.

### RULE.

Place units under units, tens under tens, &c. and when you have caſt up a line, conſider how many tens are in it, and as many as there are, ſo many muſt be added to the next line, and the overplus (if any) put down exactly under the line added up; if none be over, place a cypher, and in the laſt line put down all it comes to; but ſhould any line added up not be ſo many as 10, ſet it down underneath that line and carry none.

### PROOF.

Vary the adding by beginning at the top of the ſum, and count the figures downwards in like manner as you did wards, and ſhould the ſum come to the ſame as before it is ſuppoſed to be right; this is the beſt method of proving addition.

### EXAMPLES.

| Plumbs. | Pears. |
|---|---|
| 2746 | 509274 |
| 5769 | 370629 |
| 2978 | 709684 |
| 4783 | 276847 |
| 2958 | 729083 |
| 19234 | 2595517 |

| Boys. | Girls. |
|---|---|
| 4971 | 407627 |
| 9776 | 972063 |
| 4967 | 740657 |
| 2948 | 297048 |
| 7746 | 972706 |
| 30408 | 3390101 |

## COMPOUND ADDITION OF MONEY.

### RULE.

Place pounds under pounds, ſhillings under ſhillings, &c. add up the farthings and find how many pence they make, ſo many you carry to the pence, the overplus (if any) place under the farthings (this muſt be obſerved in placing the overplus under the pence and ſhillings alſo) then add up the pence, and find how many ſhillings, the number of which muſt be carried to the ſhillings, and in like manner add up the ſhillings, and find how many pounds, and carry the pounds to the pounds, and add as in Simple Addition.

EXAMPLES.

| L. | S. | D. |
|---|---|---|
| 74 | 17 | 6 |
| 42 | 15 | 7 |
| 37 | 19 | 11 |
| 91 | 18 | 9 |
| 72 | 16 | 10 |
| 320 | 8 | 7 |

| L. | S. | D. |
|---|---|---|
| 42 | 14 | 6 |
| 27 | 19 | 8 |
| 59 | 17 | 7 |
| 25 | 18 | 11 |
| 76 | 16 | 10 |
| 233 | 7 | 6 |

| 3 L. | S. | D. | 4 L. | S. | D. |
|---|---|---|---|---|---|
| 746 | 17 | 6½ | 627 | 13 | 6½ |
| 475 | 18 | 9¾ | 74 | 19 | 6- |
| 754 | 16 | 11¼ | 9 | 17 | 11¾ |
| 275 | 19 | 6½ | 47 | 18 | 7¼ |
| 297 | 10 | 0¾ | 314 | 10 | 6½ |
| 2551 | 2 | 10¾ | 1075 | 0 | 2 |

The work to example 3 and 4.

| F. | D. |  | F. | D. |  |
|---|---|---|---|---|---|
| 11= | 2 | ¾ | 8= | 2— |  |
| d. | s. | d. | d. | s. | d. |
| 34= | 2 | 10. | 38= | 3 | 2 |
| s. | l. | s. |  | l. | s. |
| 82= | 4 | 2 | 80= | 4 | 0 |
|  | 31 |  |  | 35 |  |
|  | 35 |  |  | 17 |  |
|  | 25 |  |  | 10 |  |

## SIMPLE SUBTRACTION.

Teacheth to take a leſs number from a greater, and ſhews the remainder or difference.

RULE

### RULE.

Begin at the right hand to take the lower figure from the upper, but ſhould the lower figure be greater than the upper, borrow 10 which add to the upper figure, and then ſubtract, and pay it by carrying one to the next figure, and ſo proceed through the whole.

### PROOF.

Add the remainder to the leſſer number, and if that ſum be like the greater, the work is right.

### EXAMPLES.

| | | | |
|---|---|---|---|
| From | 47160246 | From | 400207 |
| Take | 21747624 | Take | 209598 |
| Rem. | 25412622 | Rem. | 190609 |
| Proof | 47160246 | Proof. | 400207 |

COM-

## COMPOUND SUBTRACTION OF MONEY.

### RULE.

When the lower number is greater than the top, if in farthings borrow 4, which add to the farthings and then ſubtract; in pence borrow 12, and in ſhillings 20; then work the pounds as ſimple ſubtraction; but do not forget to carry 1 to the next number whenever you borrow.

### EXAMPLES.

| | L. | S. | D. |
|---|---|---|---|
| From | 746 | 17 | $4\frac{1}{4}$ |
| Take | 247 | 13 | $7\frac{1}{2}$ |
| Rem. | 499 | 3 | $8\frac{3}{4}$ |
| Proof | 746 | 17 | $4\frac{1}{4}$ |

| | L. | S. | D. |
|---|---|---|---|
| From | 374 | 11 | $3\frac{1}{2}$ |
| Take | 219 | 11 | $6\frac{3}{4}$ |
| Rem. | 154 | 19 | $8\frac{3}{4}$ |
| Proof | 174 | 11 | $3\frac{1}{2}$ |

S I M-

## SIMPLE MULTIPLICATION.

Compendiouſly performs the office of many additions, to this rule belong three principal members, viz.

1. The Multiplicand, or number to be multiplied.

2. The Multiplier, or number by which you multiply.

3. The Product, or number produced by multiplying.

---

### RULE.

Take care to place the firſt figure of every line exactly under its multiplyer, and as you multiply carry 1 for every 10; ſhould there be any cyphers at the end (or otherwiſe) in the multipiler, they muſt be placed in exact order cypher under cypher, as they ſtand. When the whole of the multiplication is performed, and your multiplier conſiſts of more than one line, you muſt add it up as Simple Addition.

PROOF.

### PROOF.

Make the multiplicand the multiplier, and if the product comes out the ſame as before, the work is right: Some maſters teach to prove multiplication by the croſs, it is by no means to be depended upon; to prove it by diviſion is beſt.

### EXAMPLES.

| | |
|---:|---:|
| 275463819 | 726395418 |
| 5 | 70 |
| 1377319095 | 50847679260 |

547296318 multiplicand.
40250 multiplier.

27364815900
1094592636
21891852720

22028676799500 product.

COM-

## COMPOUND MULTIPLICATION OF MONEY.

### RULE.

Multiply the farthings and find how many pence they make, which number carry to the pence; the overplus (if any) ſet down under your farthings; then multiply the pence and find how many ſhillings they make, the number of which muſt be carried to the ſhillings and the overplus placed under the pence; in like manner multiply your ſhillings and find how many pounds, and carry the pounds to the pounds, then multiply the pounds as Simple Multiplication.

EXAMPLES.

### EXAMPLES.

| L. | s. | D. | L. | s. | D. |
|---|---|---|---|---|---|
| 574 | 17 | 6¼ | 429 | 16 | 8¾ |
|  |  | 3 |  |  | 6 |
| 1724 | 12 | 6½ | 2579 | 0 | 4½ |

The work to example 1 and 2.

| | |
|---|---|
| qrs. d. | d. |
| 3=0¾ | 18=4½ |
| d. s. d. | d. s. d. |
| 18 1 6 | 52=4 4 |
| s. l. s. | l. s. |
| 52 2 12 | 100=5 0 |
| 14 | 59 |
| 22 | 17 |
| 17 | 25 |

*N. B.* When the multiplyer exceeds 12.

### RULE.

Multiply by numbers, which when multiplied into each other make the multiplier, or as near as poſſible, and add or ſubtract as occaſion requires; let it be required to multiply 4l. 17s. 6½d. by 25, in this caſe you muſt multiply 4l. 17s. 6½d. by 5, and that product by 5 again, for example.

| | L. | S. | D. | |
|---|---|---|---|---|
| Multiply | 4 | 17 | 6½ | by 25 |
| | | | | 5×5=25 |
| | 24 | 7 | 8½ | |
| | | | 5 | |
| | 121 | 18 | 6½ | |
| Multiply | 3 | 17 | 8¼ | by 31 |
| | | | | 6×5+1=31 |
| | 23 | 6 | 1½ | |
| | | | 5 | |
| | 116 | 10 | 7½ | |
| | 3 | 17 | 8¼ | +1 |
| | 120 | 8 | 3¾ | |
| Multiply | 2 | 13 | 7¾ | by 83 |
| | | | | 12×7—1=83 |
| | 32 | 3 | 9 | - |
| | | | 7 | |
| | 225 | 6 | 3 | — |
| | 2 | 13 | 7¾ | ——1 |
| | 222 | 12 | 7¼ | |

## SIMPLE DIVISION.

Teacheth to find how often one number is contained in another, or to divide any number into what parts you pleaſe.

*N. B.* In this rule there are three numbers real, and a fourth accidental, viz.

1. The Dividend, or number to be divided.

2. The Diviſor, or number by which you divide.

3. The Quotient, or number that ſhews how often the diviſor is contained in the dividend.

4. The Accidental number, is what remains when the work is finiſhed, and is always of the ſame name as the dividend.

### CASE I.

When the diviſor is not greater than 12.

### RULE.

Find how often it is contained in the firſt figure of the dividend, but ſhould it be leſs than the diviſor, take the product of the firſt two figures (or more if need be) and find how often it is contained in them, ſet it down under the figure or figures divided, and carry the overplus (if any) to the next figure in the dividend as ſo many tens; but ſhould nothing remain, and the next figure in the dividend be leſs than the diviſor, be ſure to put a cypher under that figure in the dividend and proceed as before; then find how often the diviſor is contained therein, ſet it down and do the ſame till you have gone through the whole.

N. B. If there is a cypher or cyphers at the end of the diviſor, cut them off and a like number of figures from the right hand of the dividend, which (if not cyphers) muſt be conſidered as part of the remainder; this is called ſhort diviſion.

### PROOF.

Multiply the quotient by the diviſor, adding in the remainder (if any) or add the whole remainder to the product at laſt, and if it comes the ſame as the dividend the work is right.

EXAMPLE.

Diviſor 5) 74750467 Dividend

Quotient 14950093--2 Remainder

5

74750467 Proof

Diviſor 5(0) 4038179(1 Dividend

Quotient 807635--41 Rem.

50

40381791 Proof

### CASE II.

When the diviſor is greater or more than 12.

### RULE.

See how often the firſt figure of the diviſor is contained in the firſt figure of the dividend, or ſhould the firſt figure in the dividend be leſs than that in the diviſor, take the product of the firſt two figures in the dividend, and ſee how often in them; then put it in the quotient, by which multiply the diviſor, and place the product under the dividend (allowing as many figures as there are in your diviſor, and one more if the firſt figure in the dividend be leſs than the firſt figure in the diviſor) draw a line underneath it, ſubtract it therefrom, and to the remainder annex the following figure of the dividend; and ſhould that new dividend be leſs than the diviſor, put a cypher in the quotient and annex the following figure of the whole dividend, then proceed as before: ever obſerving, that every new product be leſs than the new dividend, and the remainder be not ſo great as the diviſor; for if it is, you may be aſſured it will go more; this is called long diviſion.

EXAMPLES

### EXAMPLES.

```
diviſor   dividend          quotient
  24)   21716421          (904850
        216                     24
        --------          --------
         116              3619400
          96             1809700
        -------          ---------
         204             21716400
         192                   21
        -------          ---------
         122             21716421 proof.
         120             --------
        -------
  rem.    21
795 )      7192657          ( 9047
           7155               795
          -------          -------
            3765            45235
            3180           81423
          -------         63329
            5857           -------
            5565          7192365
          -------             292
  rem.      292           -------
                          7192657 proof
                          -------
```

## COMPOUND DIVISION OF MONEY.

Work the pounds as ſimple diviſion; but what may be over (if any) multiply by 20 and add in the ſhillings, then divide as before; the over ſhillings multiply by 12 and add in the pence; and the over pence multiply by 4 and add in the farthings.

### EXAMPLES.

First Example.

| | L. | S. | D. |
|---|---|---|---|
| 5) | 475 | 15 | 5½ |
| | 95 | 3 | 1-2 |
| | | | ·5 |
| Proof | 475 | 15 | 5½ |

Second Example.

| | L. | S. | D. |
|---|---|---|---|
| 6) | 82 | 18 | 9¾ |
| | 13 | 16 | 5½-3 |
| | | | 6 |
| Proof | 82 | 18 | 9¼ |

Example 2d worked.

4
20
80
18
6)98
S.
16--2
12
24
9
6)33
D.
5—3
4
12
3
6)15
2—3

---

## THE

# APPENDIX.

## REDUCTION

Brings quantities from one denomination to another, ſtill keeping or retaining the ſame value.

### CASE I.

Great names are brought to ſmall by multiplying, ſmall to great by dividing, obſerving always to multiply or divide by as many of the leſs as make one of the greater; however, it is moſt uſual to multiply or divide ſtep by ſtep; for if pounds are to be brought to farthings, bring the pounds firſt to ſhillings, then the ſhillings to pence, and the pence to farthings.

EXAMPLES.

In 52 pounds, how many farthings?

52 pounds
20
1040 ſhillings
12
12480 pence
4

*Anſwer.* 49920 *farthings.*

In 49920 farthings, how many pounds?

4,)49920
12)12480 pence
2,0) 104,0 ſhillings

*Anſwer.* 52 *pounds.*

N. B. The two examples might have been worked thus.

In 52 pounds how, many farthings?

52 pounds
960
3120
468

*Anſwer.* 49920 *farthings.*

In 49920 farthings, how many pounds?

```
         Q.     L.
96,0)  4992,0 (52
       480
       ———
        192
        192 Anſwer 52 pounds.
       ———
```

In 13l. how many ſhillings, pence and farthings?

*A.* 260 *ſhillings,* 3120 *pence,* 12480 *farthings.*

How many farthings are there in 72 guineas?

*A.* 72576 *farthings.*

In 19 crowns, how many ſhillings and three-pences?

*A.* 95 *ſhillings,* 380 *three pences.*

Reduce 15 guineas to ſhillings and pence?

*A.* 315 *ſhillings,* 3780 *pence.*

How many half-crowns are there in 75 pounds?

*A.* 600 *half-crowns.*

Reduce 21 half-guineas to ſix-pences and two-pences.

*A.* 441 *ſixpences,* 1323 *two-pences.*

In 474680 farthings, how many pounds?

*A.* 494 *pounds,* 9 *ſhillings* and 2 *pence.*

In 84960 pence, how many guineas?

*A.* 337 *guineas* and 3 *ſhillings.*

How many crowns are there in 8470 ſhillings?

*A.* 1694 *crowns.*

How many guineas are there in 57192 ſix-pences?

*A.* 1361 *guineas* and 15 *ſhillings.*

In 58760 farthings, how many pence, half-crowns and guineas?

*A.* 14690 *pence,* 489 *half-crowns,* 58 *guineas,* 6 *ſhillings* and 2 *pence* over.

In 400 three-pences, how many ſhillings, crowns and pounds?

*A.* 100 *ſhillings*, 20 *crowus*, and 5l:

### CASE II.

When a compound number is required to be brought to its loweſt denomination.

### RULE.

As you multiply add to it what may be of the next loweſt name; for inſtance, let it be required to find how many farthings there are in 5 pounds, 17 ſhillings and 6 pence half-penny: to perform this multiply the pounds by 20 and add to it 17, that will produce the ſhillings in 5l. 17s. then multiply the ſhillings in 5l. 17. by 12, and add in 6 which will produce the pence in 5l. 17l. 6d. laſtly multiply the pence in 5l. 17s. 6d. by 4, and add in 2, it will then produce the farthings in 5l. 17s. 6d.½ as required.

## EXAMPLES.

In 5l. 17 6d½. how many farthings?

L. S. D.
5 17 6½
20

L. S.
117 ſhillings in 5. 17
12

L. S. D.
1410 pence in 5 17 6
4

L. S. D.
*Anſwer.* 5642 *farthings* in 5. 17. 6½.

tons. hhd. galls. pints.
In 50 2 16 7 of wine, how many pints?
4

tons hhd.
202 hogſheads in 50 2
63

622
1212

tons hod gall
12742 gallons in 50 2 16
8

tons hhd gall pints
101943 pints in 50 2 2 16

In 21l. 13s. 7d.¾ how many farthings?

*A.* 20815 *farthings.*

In 36l. 0s. 9d. how many ſhillings and pence?

*A.* 720 *ſhillings* 8649 *pence.*

Reduce 25 guineas and a crown, to ſhillings and pence.

*A.* 530 *ſhillings,* 6360 *pence.*

Bring 22 pounds and a half-guinea to farthings.

*A.* 21624 *farthings.*

How many pence are there in 15 guineas and a half?

*A.* 3906 *pence.*

How many farthings are there in nineteen guineas, ſeventeen pounds and thirteen half-guineas.

*A.* 42024 *farthings.*

## CASE III.

When one number is required to be divided by another.

RULE.

### CASE III.

When one number is required to be divided by another.

### RULE.

Bring the two numbers to one name, and divide one by the other.

### EXAMPLES.

In 560 guineas, how many pieces, each 6s. 8d?

```
             G.                 6s. 8d.
            560                 12
             21                 ——
           ————                 80 pence
            560                 ————
          1120
          —————
          11760 ſhillings
             12
          —————
     8,0)14112,0 pence
     ——————————
          1764. A. 1764 pieces.
     ——————————
```

How many pieces, each 36 ſhillings, are there in 176 guineas?

```
      176 guineas
       21
      ---
      176
     352
   -------
 36)3696(102
    36
   ----
      96
      72
      --
      24
```

*A.* 102 *pieces* and 24s. over.

In 36 pounds, how many guineas?

*A.* 34 *guineas*, 6 *ſhillings*.

In 72 guineas, how many pounds?

*A.* 75 *pounds*, 12 *ſhillings*.

In 21 guineas, how many crowns?

*A.* 88 *crowns*, 1 *ſhilling*.

In 84 Crowns, how many guineas?

*A.* 20 *guineas*.

In 472 pounds, how many pieces, each 4 ſhillings and 6 pence?

*A.* 2097 *pieces*, 3 *ſhillings* and 6 *pence* over.

In 436 pieces, each 6 ſhillings and 8d. how many crowns?

*A.* 581 *crowns*, and 1 *ſhilling* 8 *pence* over.

### CASE IV.

To find in any ſum, quantity, &c. an equal number of each of many inferior denominations.

### RULE.

Add together the whole of the inferior names, and make their ſum a deviſor to ſuch a ſum, quantity, &c. then proceed as in Caſe 3d.

### EXAMPLES.

In 56 guineas, how many half guineas, crowns & ſhillings, of each an equal number?

| S. | D. | |
|---|---|---|
| 10 | 6 | half-guinea |
| 5 | 0 | a crown |
| 2 | 6 | half-crown |
| 1 | 0 | a ſhilling |
| 19 | 0 | |

56
21
---
56
112
---
19) 1176 (61
114
---
36
19
---
17

*A.* 61 of each, and 17s. over.

In a pipe of wine, how many gallons, quarts, pints and half-pints, of each an equal number?

G.
126=1 pipe
8

1008 pints
2

23)2016(87
184

176
161

15

| G. | Q. | P. | $\frac{1}{2}$P. |
|---|---|---|---|
| 1 | 0 | 0 | 0 |
| 0 | 1 | 0 | 0 |
| 0 | 0 | 1 | 0 |
| 0 | 0 | 0 | 1 |
| 1 | 1 | 1 | 1 |

4

5 quarts
2

11 pints
2

23 half-pints

*A.* 87 of each, and 15 *half-pints* over.

A merchant having 123 ingots of ſilver, each 5lb. 11$\frac{1}{2}$oz. and 26 wedges, each 2lb. 6oz. 1$\frac{1}{2}$dwts, would have the whole caſt into an equal number of tankards of 11½ ounces, cups of 6½oz. candleſticks of 8¾, ſpoons of 5oz. 6dwts. what was the number of each?

*A.* 298 of each, and 511*dwts* over.

What equal number of ſhirts of 3½ yards, ſhifts of 4¼ ells Flemiſh, aprons of 1¼ ells Engliſh, may be made out of 12 pieces of Holland, each 27½ yards?

*A.* 40 of each.

In 27 large veſſels, each 318 gallons and 56 pipes of wine, what equal number of caſks of 21 gallons 7 pints, 18 gallons 4 pints, 16 gallons 2 pints, 14 gallons 7 pints, and 13 gallons 5 pints?

*A.* 183 of each, and 64 *gallons* and 1 *pint* remaining.

## OF WEIGHTS AND MEASURES.

### TROY WEIGHT.

24 grains make 1 pennyweight marked { *gr* / *dwt* }

20 pennyweights 1 ounce (oz)
12 ounces 1 pound (lb)

By this weight are weighed gold, ſilver, jewels and precious ſtones.

In 25 pounds of gold, how many grains?

*A.* 144000 *grains.*

Bring 412128 grains of gold into pounds.

*A.* 71lb. 6oz. 12dwts.

In 75 ingots of gold, each 3 lb. 6½ oz. how many pennyweights?

*A.* 63750 *pennyweights.*

How many medals, each 1oz. 16dwts. 12grs. may be made out of 27 wedges of gold, each 3½ pounds?

*A.* 621 *medals* and 324 *grains* over.

### AVOIRDUPOIS WEIGHT.

16 drachms make 1 ounce, marked (dr) (oz)
16 ounces 1 pound (lb)

| | | |
|---|---|---|
| 28 pounds | 1 quarter | (*qr*) |
| 4 quarters, or 112 lb. | 1 hundred | (*cwt*) |
| 20 hundreds | 1 ton | (*ton*) |

By this weight are weighed any thing of a coarſe or droſſy nature; as all grocery, chandlery wares, &c. all metals, (gold and ſilver excepted.)

Reduce 70 tons, 12cwt. 3qrs. of cordage into pounds?

*A.* 158228 *pounds.*

In 158228 pounds of cordage, how many tons?

*A.* 70 tons. 12cwt. 3qrs.

Change 81 bars of iron, each 2¼ cwt into ounces?

*A.* 326592 *ounces.*

In 24 bags of hops, each 16½ cwt. what equal number of pockets of 1 cwt. 1 qr. 17 lb. of 1cwt. 1qr. 19lb. of 2¼cwt. and of 2cwt. 2qr. 19lb.?

*A.* 51 *of each* and 135 *pounds* over.

## APOTHECARIES WEIGHT.

| | | |
|---|---|---|
| 20 grains make | 1 ſcruple, marked | (gr)<br>(℈) |
| 3 ſcruples | 1 drachm | (ʒ) |
| 8 drachms | 1 ounce | (℥) |
| 12 ounces | 1 pound | *(lb)* |

By this weight the apothecaries compound their medicines, but buy their drugs by avoirdupois.

Reduce 21 lb. 7 ℥ 1 ʒ 1 ℈ into grains?

*A.* 124400 *grains.*

Bring 21460 grains into ounces.

*A.* 44℥, 5ʒ, 2℈.

In ſeven pounds of compounds, how many papers each 1ʒ, 2℈?

*A.* 403 *papers* and 1℈ over.

In 3lb, 6℥, 7ʒ of compounds, what equal number of pills of 1ʒ, 1℈, of 1ʒ, 10 grains and boluſſes of 5ʒ, 2℈?

*A.* 42 of each.

## CLOTH MEASURE.

| | | |
|---|---|---|
| 2¼ inches make | 1 nail marked | (*nl*) |
| 4 nails | 1 quarter of a yd. | (*qr*) |
| 4 quarters | 1 yard | (*yd*) |
| 3 quarters | 1 Flemiſh ell | (*E.F.*) |
| 5 quarters | 1 Engliſh ell | (*E.E.*) |
| 6 quarters | 1 French ell | (*E.Fr.*) |

Bring 165 yards and 3 quarters into nails?

*A.* 2652 *nails.*

In 3710 nails, how many yards?

*A.* 231 *yards,* 3 *quarter* and 2 *nails*?

Reduce 25 bails of cloth, each 42 pieces, each 28½ ells Flemiſh into nails?

*A.* 359100 *nails.*

How many ſhirts each 3 ells Engliſh may be made out of 5 pieces of cloth, each 22½ yards?

*A.* 30 *ſhirts.*

## LONG MEASURE.

| | | |
|---|---|---|
| 3 barley corns make | 1 inch marked | (*bar*)<br>(*in*) |
| 12 inches | 1 foot | (*ft*) |
| 3 feet | 1 yard | (*yd*) |
| 6 feet or 2 yards | 1 fathom | |
| 5½ yards | 1 rod, po. or p. | (*r.p.*) |
| 40 poles | 1 furlong | (*fur*) |
| 8 furlongs or 1760 yds | 1 mile | (*mile*) |
| 3 miles | 1 league | (*lea*) |
| 60 miles or 20 leag. | 1 degree | (*deg*) |

This meaſure is uſed to meaſure diſtance of places, or any thing elſe, where length only is conſidered.

N. B. A degree is 69 miles, 4 furlongs nearly though commonly reckoned 60 miles.

In 1468 yards, how many inches?

*A.* 52848 *inches.*

In 31 miles 29 fathoms, how many yards?

*A.* 54618 *yards.*

Bring 13685760 barley corns into miles.

*A.* 72 *miles.*

How many times will a coach-wheel of 15 feet 7½ inches in circumference turn about its axis, it being drawn 85 miles?

*A.* 28723 *times* and 37½ *inches* over.

### WINE MEASURE.

| | | |
|---|---|---|
| 2 pints make | 1 quart marked | (*pts*)<br>(*qts*) |
| 8 pints or 4 quarts | 1 gallon | (*gal*) |
| 10 gallons | 1 anchor of bdy | (*anc*) |
| 18 gallons | 1 runlet | (*run*) |
| 31½ gallons | half an hhd | (½*hhd*) |
| 42 gallons | 1 tierce | (*ti*) |
| 63 gallons | 1 hogſhead | (*hhd*) |
| 84 gallons | 1 puncheon | (*p*) |
| 2 hogſheads | 1 pipe or butt | (*p or b*) |
| 2 pipes or 4 hhds | 1 tun | (*tun*) |

All brandies, ſpirits, perry, cyder, mead, vinegar, honey and oil, are meaſured by this meaſure, alſo milk.

Reduce 42 tuns, 2 hogſheads and 6 gallons of wine into pints?

*A.* 85808 *pints.*

Bring 47512 pints of wine into tuns.

*A.* 23 *tons,* 2 *hogſheads* and 17 *gallons.*

In 2723 pints, 670 gallons and 52 hogſheads of Liſbon, how many tuns?

*A.* 17 *tuns* 2 *gallons,* and 3 *pints.*

In 512 hogſheads of Port wine, how many ſmall caſks of each 27 ½ gallons?

*A.* 1172 *caſks* and 26 *gallons* over.

### BEER AND ALE MEASURE.

| | | |
|---|---|---|
| 2 pints make | 1 quart marked | *(pt)*<br>*(qt)* |
| 8 pints or 4 quarts | 1 gallon | *(gal)* |
| 8 gallons | 1 firkin of ale | *(a.fi)* |
| 9 gallons | 1 firkin of beer | *(b.fi)* |
| 32 gallons | 1 barrel of ale | *(bar.a)* |
| 36 gallons | 1 barrel of beer | *(bar.b)* |
| 2 firkins | 1 kilderkin | *(kil)* |
| 2 kildks or 4 fir. | 1 barrel | *(bar)* |
| 1½ barr. or 54 gals. | 1 hhd. of beer | *(hd.b)* |
| 1½ barrel or 48 gals. | 1 hhd. of ale | *(hd.a)* |
| 3 barrels or 2 hhds. | 1 butt | *(butt)* |
| 2 butts or 4 hhds. | 1 tun | *(tun)* |

In 51 hogſheads, 18 gallons, 1 quart, and 1 pint of beer how, many pints?

*A.* 22179 *pints.*

Bring 22179 pints of beer into hogſheads.

*A.* 51 *hogſheads,* 18 *gallons,* 1 *quart, and* 1 *pint.*

In 74 hogſheads of ale, how many barrels?

*A.* 111 *barrels.*

A brewer having caſks of 3 ſizes (viz.) of 16 gallons, 12 gallons, and 8 gallons, ordered his foreman to fill an equal number of each out of a large tub containing 5 tons, 1 hogſhead and 18 gallons of beer; what was the number filled?

*A.* 32 of each.

## DRY MEASURE.

### OF CORN.

| | | | | |
|---|---|---|---|---|
| 2 pints | makes | 1 quart | marked | *pts*<br>*qur* |
| 2 quarts or 4pints | | 1 pottle | —— | (*pot*) |
| 2 pottles | —— | 1 gallon | —— | (*gal*) |

| | | | |
|---|---|---|---|
| 2 gallons make | 1 peck | marked | *(pk)* |
| 4 peeks or 8 gals. | 1 buſhel | —— | *(bu)* |
| 4 buſhels —— | 1 ſack | —— | *(ſk)* |
| 2 ſacks or 8 buſh. | 1 quarter | —— | *(qr)* |
| 5 quars. 10 ſacks<br>or 40 Buſhels | 1 load | —— | *(ld)* |

### OF COALS.

| | | | |
|---|---|---|---|
| 2 gallons —— | 1 peck | —— | *(gal)*<br>*(pk)* |
| 4 pecks or 8 gals. | 1 buſhel | —— | *(bu)* |
| 3 buſhels —— | 1 ſack | —— | *(ſk)* |
| 9 buſhels —— | 1 vat or ſtrike | | *(vat ſtr)* |
| 27 buſhels —— | 1 load | —— | *(ld)* |
| 36 buſh or 12 ſac. | 1 chaldron | — | *(chal)* |
| 5 chaldrons —— | 1 wey | —— | *(wey)* |
| 2 weys —— | 1 laſt | —— | *(laſt)* |
| 21 chaldrons — | 1 ſcore | —— | *(ſcr)* |

This meaſure is applied to all dry goods.

*N. B.* Eighteen inches and a half wide, & eight inches deep, is the ſtandard buſhel.

In 80 loads, 2 quarters and 3 buſhels of corn, how many pints?

*A.* 206016 *pints.*

Bring 120460 half-pints of corn into loads.

*A.* 23 *loads,* 21 *buſhels* and 3 *quarts.*

In 810 chaldron of coals, how many loads?

*A.* 1080 *loads.*

In 20 lighters of coals, each 2000 buſhels, and 56 boat loads, each 6½ chaldrons, how many loads?

*A.* 1966 *loads* and 22 *buſhels.*

## TIMBER MEASURE.

| | | | | |
|---|---|---|---|---|
| 64 quarter's make | | 1 ſolid inch marked | | *qrs*<br>*in* |
| 1728 inches | — | 1 ſolid foot | — | *(ſt)* |
| 27 feet | — | 1 yard | — | *(yd)* |
| 50 feet | — | 1 load | — | *(ld)* |
| 40 feet | — | 1 tun | — | *(tun)* |

In 31 loads, 22 feet, how many ſolid inches?

*A.* 2716416 *ſolid inches.*

Bring 2716416 ſolid inches into loads.

*A.* 31 *loads* and 22 *feet.*

In 42 ſticks of timber, each 4 tons 17 feet, how many ſolid quarter inches?

*A.* 822140928 *ſolid quarter inches.*

In 50 lots of timber, each 120 loads 17 feet, how many lots, each 16 tuns?

*A.* 470 *lots*, and 50 *feet* over.

## LAND AND SQUARE MEASURE.

| | | | | |
|---|---|---|---|---|
| 144 inches | make | 1 foot | marked | (*in ft*) |
| 3 feet | — | 1 yard | — | (*yd*) |
| 30¼ yards | — | 1 pole | — | (*p*) |
| 40 poles | — | 1 rood | — | (*rd*) |
| 4 rood | — | 1 acre | — | (*ac*) |
| 640 acres | — | 1 mile | — | (*mi*) |

Alſo.

| | | | | |
|---|---|---|---|---|
| 100 feet | — | 1 ſquare flooring | | (*ſq*) |
| 272¼ feet | — | 1 rod | — | (*rd*) |

By this meaſure are meaſured all things that have length and breadth; ſuch as land, painting, plaiſtering, flooring, thatching, plumbing, glazing, &c.

In 84 acres, 1 rood, 30 poles, how many poles?

*A.* 13510 *poles.*

Bring 427168 poles into acres.

*A.* 2669 *acres,* 3 *roods,* and 8 *poles*

In 7 fields, each 417 poles, how many acres?

*A.* 18 *acres,* 0 *roods,* and 39 *poles.*

How many rod of brick work are 9801 feet?

*A.* 36 *rods.*

## WOOL WEIGHT.

| | | | | |
|---|---|---|---|---|
| 7 pounds | makes | 1 clove | marked | (*lb clo*) |
| 2 cloves | — | 1 ſtone | — | (*ſt*) |
| 2 ſtone | — | 1 tod | — | (*tod*) |
| 6½ tods | — | 1 wey | — | (*wey*) |
| 2 weys | — | 1 ſack | | (*ſk*) |
| 12 ſacks | — | 1 laſt | | (*laſt*) |

In 5 tods, 1 ſtone, and 1 clove of wool, how many pounds?

*A.* 161 *pounds.*

In 161 pounds of wool, how many tods?

*A.* 5 *tods,* 1 *ſtone,* and 1 *clove.*

## BREAD WEIGHT.

| | lb. | oz. | dws. |
|---|---|---|---|
| A peck loaf weighs | 17 | 6 | 2 |
| Half peck - | 8 | 11 | 1 |
| Quartern | 4 | 5 | 8 |

## HAY WEIGHT.

A truſs weighs 56 pounds.

A load contains 36 truſſes.

A tun contains 40 truſſes.

In 504800 truſſes of hay, how many tuns?

*A.* 12620 *tuns.*

In 12620 tuns of hay, how many truſſes?

*A.* 504800 *truſſes.*

In 500 tuns of hay, how many loads?

*A.* 555 *loads* and 20 *truſſes.*

## MOTION.

| | | | | |
|---|---|---|---|---|
| 60 ſeconds make | 1 minute | marked | (" ') |
| 60 minutes — | 1 degree | — | (o) |
| 15 degrees — | 1 hour | — | (*h*) |
| 30 degrees or 2 hs | 1 ſign | — | (*S*) |
| 12 ſigns or 360 degrees | 1 circle | — | (*cir*) |

Reduce 13 circles, 5 ſigns, 1 hour, 12 degrees, 14 minutes, 15 ſeconds into thirds.

*A.* 1049163300 *thirds.*

Bring 1049163300 thirds into circles.

*A.* 13 *circles,* 5 *ſigns,* 1 *hour,* 12 *degrees,* 14 *minuts* and 15 *ſeconds.*

Two places ſituated under the equinox, when 'tis 8 o'clock in the morning at the weſtmoſt, it is half paſt 5 o'clock in the evening at the eaſtmoſt, how far are they aſunder?

*A.* 8550 *miles.*

Two places ſituated as above 3825 miles aſunder, when it is noon at the eaſtmoſt, what is it o'clock at the weſtmoſt; and when it is noon at the weſtmoſt, what is it o'clock at the eaſtmoſt?

*A. When it is noon at the eaſtmoſt, it is ¾ paſt 7 in the morning at the weſtmoſt; and when noon at the weſtmoſt, it is ¼ paſt 4 o'clock in the afternoon at the eaſtmoſt.*

## TIME.

| | | | | |
|---|---|---|---|---|
| 60 ſeconds makes | | 1 minute marked | | (''') |
| 60 minutes | — | 1 hour | — | *(hr)* |
| 24 hour | — | 1 way | — | *(day)* |
| 7 days | — | 1 week | — | *(wk)* |
| 4 weeks | — | 1 month | — | *(mth)* |
| 13 months 1 day 6 hours or 365 days 6 hour | | 1 year nearly | | *(yr)* |

In 72 years, 2 months, 1 week 6 days how many minutes, allowing the year to be 365 days 6 hours?

*A.* 37968480 *minutes.*

Bring 14200920 minuts into years.

*A.* 27 *years.*

How many minutes elapſed between the 2d of May at 8 o'clock in the morning, 1778 and the 4th of July 1780, at 3 o'clock in the afternoon?

*A.* 1143780 *minutes.*

# THE SINGLE RULE OF THREE DIRECT.

Teatheth by *three* numbers given to find a *fourth*, which will bear a juſt proportion to the *third*, as the *ſecond* does to the *firſt*. Alſo direct proportion is, when more requires more, or leſs requires leſs; that is, when the *third* number is greater than the *firſt* and requires greater than the *ſecond*; or when the *third* number is leſs than the *firſt* and requires leſs than the *ſecond*.

## TO STATE THE QUESTION.

### RULE.

Read the Queſtion to find what is demanded, make the *ſecond* number of that name; the *firſt* what that commands or is equal in value to it, and the *third* what governs the demand or anſwer required.

*N. B.* The queſtion being ſtated, bring the *firſt* and *third* numbers into one denomination, or name (when not ſo) and reduce the *ſecond* number to the loweſt denomination it is given in; then multiply the *ſecond* and *third* numbers into each other, and divide that product by the *firſt*, the quotient will be the anſwer to the queſtion in the ſame denomination as the *ſecond* number was left in, and ſhould there be a remainder (to find its value) multiply it into the next inferior denomination to the quotient and divide that product by the former diviſor.

### A THEOREM.

In four proportional numbers or quantities the product of the two extreams is equal to the product of the two means, that is, as 2 is to 6 ſo is 4 to 12, here 2 multiplied by 12 is equal to 6, multiplied by 4 equal to 24, for 2 and 12 are the two extreams, and 6 and 4 the two means.

### IN OTHER WORDS.

The firſt antecedent multiplied into the ſecond conſequent, is equal to the product of the firſt conſequent, multiplied into the ſecond antecedent; for 2 and 4 are antecedents, and 6 and 12 conſequents, therefore $2 \times 12 = 6 \times 4 = 24$.

By this theorem are queſtions in the Rule of Three proved.

*N. B.* The proportion that numbers or quantities bear to each other is called the ratio.

### EXAMPLES.

Suppoſe I gave 17 ſhillings for a yard of cloth, what will 25 yards coſt at that rate?

yd. s. yds.
If 1 ——— 17 ——— 25
17
———
175
25
———
2,0)42,5 ſhillings
———
£. 21—5

*Anſ.* £. 21 5 0

If 10 cwt. of ſugar coſt 33l. 6s. 8d. what coſt $3\frac{1}{2}$ cwt?

| cwt. | | l. s. d. | | cwt. |
|---|---|---|---|---|
| If 10 | —— | 33 6 8 | — | $3\frac{1}{2}$ |
| 2 | | 20 | | 2 |
| 20 | | 666 | | 7 |

12

8000 pence
7

2,0)5600,0

12) 2800 pence

2,0) 23,3—4

L. 11 13 4

*Anſ.* L. 11 13 4

What muſt I give for 5 lb. of butter, at $7\frac{1}{2}$d. per lb?

*A.* 3s. $1\frac{1}{2}$d.

How many lbs. of butter will 3s. 1½d. purchaſe, at 7½ per lb?

*A.* 5 *pounds.*

What does 3 cwt. of ſugar come to, at 9½d. per lb?

*A.* 13*l.* 6*s.*

What quantity of ſugar will 13l. 6s. purchaſe, at 9½d per lb?

*A.* 3 *cwt.*

How many dozen of marbles will a crown purchaſe, at 8 for a halfpenny?

*A.* 80 *dozen.*

Bought 3lb. 5oz. 15dwts. of plate for 11l. 9s. 7½. what gave I per ounce?

*A.* 5*s.* 6*d.*

Cloth at 5s. 8d. per yard, what is that per ell Engliſh?

*A.* 7*s.* 1*d.*

Cloth at 18s. 3d. per ell Flemiſh, what is that per yard?

*A.* 1*l.* 4*s.* 4*d.*

If 48½ ells Engliſh cloth coſt 19l. 3s. 11½d. what is that per yard?

*A.* 6*s.* 4*d.*

How many apples will three half guineas purchaſe, at 5 for a penny?

*A.* 1890 *apples.*

What comes 25 flitches of bacon to, each 57½lb. at the rate of 3½lb. for 1s. 7¼d?

*A.* 32*l.* 18*s.* 10¼*d.*

What ſum will purchaſe 20 fields, 12 of 7 acres, 116 pls. and 8 of 6 acres, 20 pls. at 10l. 13s. 4d. per acre?

*A.* 1511*l.* 9*s.* 4*d.*

If two oranges and an half coſt 1¼d. what coſt five thouſand and five?

*A.* 10*l.* 8*s.* 6½*d.*

Bought 840 pair of ſilk hoſe for 12s. 6d. per pair, and ſold them again for 13s. 9d. per pair, what did I gain thereby?

*A.* 52*l.* 10*s.*

Sold 120 reams of paper, at 13s. 9d. per ream, and gained 7l. 10s. thereby, what did it coſt me per ream?

*A.* 12*s.* 6*d.* *per ream.*

Bought 255 hds. of port for 3130l. 13s. for 128 thereof I gave 12l. 16s. per hd. what did I gave per hd. for the remainder?

*A.* 11*l.* 15*s.* *per hogſhead.*

108 Workmen are to have 1s. 5¼d. per day each, what is their pay for 17 weeks, Sundays excepted?

*A.* 791*l.* 15*s.* 6*d.*

Bought 60 hogſheads of port wine for 14l. 3s. 6d. per hogſhead, what quantity of water muſt be added to it, to reduce the prime coſt of it to 3s. 9d. per gallon?

*A.* 756 *gallons.*

## THE RULE OF THREE INVERSE.

Teacheth by *three* given numbers, to find a *fourth* in ſuch proportion to the *ſecond*, as the *third* is to the *firſt*, in an inverted order; conſequently the leſs the *third* number is in reſpect to the *firſt*, the greater will the *fourth* number be in proportion to the *ſecond*. Alſo Inverſe Proportion is, when more requires leſs, or leſs requires more; that is, when the *third* number is greater than the *firſt*, and requires leſs than the *ſecond*; or when the *third* number is leſs than the *firſt*, and requires greater than the *ſecond*.

### RULE.

State the queſtion, and prepare the numbers as in direct proportion; then multiply the *firſt* and *ſecond* numbers together, and divide that product by the *third*, the quotient will be the anſwer to the queſtion, in the ſame denomination as the *ſecond* number.

### EXAMPLES.

If I lend my friend 100l. for 6 months, how long ought he to lend me 75l. to return the kindneſs?

|  | £. |  | months |  | £. |  |
|---|---|---|---|---|---|---|
| If | 100 | —— | 6 | —— | 75 | — |

100
———
75)600(8 months
600
———

*A. Eight months.*

If 40 men can perform a piece of work in 14 days, how long will 28 men be doing the ſame in?

If

| men | | days | | men |
|---|---|---|---|---|
| If 40 | —— | 14 | —— | 28 |

```
            14
            40
          ----
      28)560(20 days
          56
          ----
```

*A.* 20 *days.*

If 20 men can mow 510 acres of graſs in 16 days, working 12 hours per day, in what time would they have mowed it had they worked 16 hours per day?

*A.* 12 *Days.*

Of what length muſt a board be that is 5 inches broad to be equal in area to one 15 inches long and 9 inches broad.

*A.* 27 *inches.*

If a piece of graſs will graze 39 oxen 12 days, how many muſt be turned out that it may laſt the remainder 13 days?

*A.* 3 *oxen.*

If 7 yards and a half of cloth that is 1 yard three quarters wide will make a cloke, how much ſhalloon will line it that is 3 quarters wide?

*A.* 17 *yards and a half.*

A garriſon has proviſion enough to ſerve 5126 men 212 days, how long would it ſerve if re-inforced with 1280 regulars.

*A.* 169 *days.*

If the ſix-penny half-penny-loaf, when wheat is 4 ſhillings and 6 ſix-pence per buſhel, weighs 15 ounces, 9 pennyweights, what ought it to weigh when wheat is 5s. 3d. per buſhel.

*A.* 44 *ounces,* 2 *dwts.*

How many yards of linen, ell wide, are equal to 50 yards of linen that is a yard wide?

*A.* 40 *yards.*

## THE END.

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